Exhibit 4-35.1 Typical Permeability Values by Soil Type

Soil Type (USCS)	Description	Representative Permeability (k) ft/day	Acceptable Permeability Range (k) ft/day
GW	Rounded clean well graded gravel	400	>10
GP	Pearock, ASTM C33 fine aggregate size 8, MNDOT 3127 FA-3 Coarse limit of ASTM D448 Size No. 78 gravel Fine limit of ASTM D448 Size No. 78 gravel	16000 24 13	>10
SW	Rounded clean well graded sand	75	>3
SP	Coarse limit of ASTM C33 sand Fine limit of ASTM C33 sand	110 30	>3
GM	Silty gravel with less than 15% fines Silty gravel with 15 to 30% fines Silty gravel with more than 30% fines	14 0.28 0.14	10^{2}-10^{-3}
SM	Silty sand with less than 15% fines Silty sand with 15 to 30% fines Silty sand with more than 30% fines	2.13 0.71 0.14	10^{2}-10^{-3}
GC	Clayey gravel with PI between 15 and 30 1)	0.00283	10^{-3}-10^{-5}
SC	Sandy clay with PI between 10 and 15 1)	0.00283	10^{-3}-10^{-5}
ML	Low plastic silt with PI of less than 7 1) Low plastic silt with PI between 7 and 10 1)	0.017 0.0085	10^{1}-10^{-3}
CL	Low plastic silt with PI between 7 and 10 1) Low plastic clay with PI between 10 and 15 1) Low plastic clay with PI between 15 and 25 1)	0.0085 0.00283 0.00071	10^{-3}-10^{-5}
CH	High plastic clay with desiccation cracking High plastic clay without desiccation cracking	0.02835 0.00142	10^{-2}-10^{-5}

Notes:

1. Estimates of soil PI values can be obtained from published soil surveys.
2. If extreme moisture or poor compaction conditions are expected, use a permeability value on the upper portion of the acceptable range.
3. When designing a filter diaphragm in an embankment, assume the permeability of the soils in the embankment are 100 times greater than the typical values listed in this table.

THIS PAGE INTENTIONALLY LEFT BLANK